SHIP CREEK DAM REMOVAL FEASIBILITY STUDY
2006 SEDIMENT SAMPLING REPORT

December 2006

Submitted to:

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1. Introduction

Shaw Alaska, Inc. (Shaw) under contract to Inter-Fluve, Inc. (Inter-Fluve) completed sediment core sampling at two dam sites on Ship Creek, Alaska. This task is part of the Ship Creek Dam Removal Feasibility Study contracted by Alaska Department of Fish and Game (ADF&G) in 2006.

This Sediment Sampling Report is provided to describe the collection and analysis of the representative sediment samples. The data is expected to allow screening of sediment chemical composition in the proximity of each dam for study considerations.

1.1 Purpose

The intent of this sediment sampling program is to provide guidance for a limited sediment study. The resulting data is for evaluation by ADF&G. The results yield broad, time-specific information on the conditions encountered during the sample event.

1.2 Sampling Summary

Field sampling was conducted in July 2006. One sample was collected on Ship Creek upstream from both the Elmendorf Air Force Base (EAFB) and Fort Richardson (FTR) hatchery dams. Shaw collected the samples using a hand-operated core sampler capable of sampling to 3 feet below the top of sediment.

Each sample was a grab sample, a single sample representative of a specific location at a given point in time. Sample locations were chosen in conjunction with the contaminated sediment literature survey and the optimal field conditions at the time of sampling. Both samples were submitted for laboratory analysis to SGS Environmental Services, Inc. (SGS) in Anchorage and processed under a standard turnaround schedule. Lab data results are included in Attachment 4.

2. Field Sampling Plan

The following FSP procedures are intended to limit any collection procedures or process materials from biasing representative samples. The associated laboratory analysis methods are detailed in the QAPP.

2.1 Sample Locations

Before sampling began, each of the coring sites were located using hand-held GPS and noted accordingly on the field data collection form. Also, physical distance measurements were attempted at each sampling location referencing nearby permanent features.

2.2 Analytical Sample Collection

All samples were collected for laboratory analysis of petroleum hydrocarbons (Gasoline Range Organics, Diesel Range Organics, Residual Range Organics), semi-volatile organic compounds (SVOCs), and polychlorinated biphenols (PCBs). The standard operating procedure (SOP) for sediment core sampling is detailed in Attachment 1. Samples collected were not composited. No duplicate samples were collected at either location.

2.3 Precautions Against Contamination

In all cases, field collection procedures were performed to minimize contamination of samples, prevent cross-contamination between samples, and ensure sample validity by conducting proper preservation and storage in the field according to the requirements specified in the QAPP.

To ensure that reliable data were produced at these extremely low detection levels, additional emphasis was placed on clean sampling and clean laboratory practices to minimize contamination. The following general field procedures were followed:

- Sampling cleanliness was documented through the use of trip blanks for volatile organic compounds only.
- Only non-talc gloves were used and gloves were changed between sample collections.
- Samples were collected directly into sample containers documented clean at the levels of concern.
- All sample containers were double-bagged.
- One "clean hands" sampler performed all operations involving direct contact with the sample and one "dirty hands" sampler for all other operations (e.g., record keeping).

A stainless steel core sampler was used and decontaminated prior to use at the next sampling site. The SOP for decontamination of sampling equipment in the field is detailed in Attachment 2.

3. Quality Assurance Project Plan

This QAPP provides the analytical quality assurance (QA) and quality control (QC) requirements for the project. The QAPP is applicable to the QA/QC aspects of field sampling and laboratory chemical analysis. The QAPP is intended to meet the project objective of sediment characterization only.

3.1 Laboratory Analysis and Reporting

The sediment samples were collected and analyzed for the parameters detailed in Table 1. A Level 1 data deliverable package was requested to report results. All results were compared to the Alaska Department of Environmental Conservation (ADEC) *Soil Cleanup Levels, Under 40 Inch Zone, 18 AAC 75*. Any exceedances of these limits will be noted.

Table 1
Sample Bottle Schedule and Sampling Parameters for Sediment Collection

Bottle Type SGS	Analysis	Lab Method	Preserv-ative	Hold Time	Req. Temp.	Comments	Analysis Technique & Instrumentation
(1) 4-oz pre-weighed amber	Gasoline-range organics	AK101	MeOH w/BFB	28 days	4°C ± 2°C	2nd 4-oz % solids jar if no other analyses	Gas chromatography with flame ionization detector
(1) 8-oz	Diesel/residual range organics	AK102/103	None	14 days to extraction, 40 days to analysis of extract	4°C ± 2°C	None	Gas chromatography with flame ionization detector
	Semi-volatile organic compounds	SW8270C	None	14 days to extraction, 40 days to analysis of extract	4°C ± 2°C	None	Gas chromatography - mass spectrometry
	Total Polychlorinated Biphenols (PCBs)	SW8082	None	14 days to extraction, 40 days to analysis of extract	4°C ± 2°C	None	Gas chromatography with electron capture detector

3.2 Data Quality Parameters

The quality of laboratory data is measured by the accuracy, representativeness, comparability, and completeness (PARCC) of the data. These parameters and the applicable quality control procedures and levels of effort for this project are provided in Table 2.

Table 2
Data Quality Objectives – Ship Creek Sediment

Parameter	Lab MRL	Units	Method	Accuracy Limits (%)
Petroleum Hydrocarbons				
GRO	5	mg/kg	AK101	60-120
DRO	40	mg/kg	AK102	75-125
RRO	100	mg/kg	AK103	60-120
Semi-volatile Organic Compounds				
(See Attachment 6 for full list of compounds analyzed.)				
Polychlorinated Biphenyls				
Aroclor-1016	15	µg/kg	SW8082	71-127
Aroclor-1221	15	µg/kg	SW8082	—
Aroclor-1232	15	µg/kg	SW8082	—
Aroclor-1242	15	µg/kg	SW8082	—
Aroclor-1248	15	µg/kg	SW8082	—
Aroclor-1254	15	µg/kg	SW8082	—
Aroclor-1260	15	µg/kg	SW8082	65-116
Decachlorobiphenyl <surr>	0	mg/kg	SW8082	60-125

MRL = lab Method Reporting Limits
SW – EPA (1993).

3.3 Data Validation and Verification Methods

Data validation is the review process to screen data for anomalies and possible errors. A Level 1 Data Deliverable Package was provided from the lab. Data accepted from the laboratory was verified and validated by Shaw. The data validation process includes review of the following:

- Analytical methodology
- Detection limits
- Cross-contamination as indicated by blank data
- Review of the field sample surrogate recovery
- Adherence to holding times
- Sample preservation

Data was validated in accordance with the following procedures:

- *Contract Laboratory Program National Functional Guidelines for Organic Data Review* (USEAP, 1999)
- *Contract Laboratory Program National Functional Guidelines for Low Concentration Organic Data Review* (USEPA, 2001)

- *Contract Laboratory Program National Functional Guidelines for Inorganic Data Review* (USEPA, 2002)

Where data do not meet the requirements specified in this QAPP program, the data is flagged with qualifiers. The review of data will be summarized and included in the Discussion of Results section.

R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.
UJ	The analyte was analyzed, but was not detected above the level of the reported sample quantitation limit. The MRL is an estimate.
J	The result is an estimated quantity.
J+	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.
B	Analyte was detected in the field blank.
U	Analyte was not detected at the sample quantitation limit. Detections below this limit were attributed to associated blank contamination.

4. Discussion of Results

4.1 Sample Receipt and Preservation

The two sediment samples collected for the ship creek project on 7/13/06 were immediately delivered to SGS Anchorage laboratory for analysis. The samples were received in a cooler with cooler temperature blank recorded at 15.6°C and the ambient cooler temperature was recorded at 6.1°C, slightly above the temperature preservation limit of 6.0°C. The samples were delivered to the laboratory before the gel-ice in the cooler had sufficient time to equilibrate the cooler temperature, no qualification of the data is recommended due to the cooler receipt temperature. Samples were otherwise properly preserved and in order per the chain of custody.

4.2 Analytical Holding Times

Samples were reviewed for adherence to method prescribed holding times, no holding time exceedances were found.

4.3 Detection Limits

Reporting limits were achieved compared to those present in the QAPP for SW8270C semivolatile compounds. The reporting limits achieved by the laboratory for the field samples were approximately 50% higher than the QAPP specified limits, likely due to the high moisture content of the samples affecting the dry weight of samples that was extracted.

4.4 Analytical Results

Surrogate recovery for AK101 GRO spiked surrogate 4-Bromoflourobenzene in sample 071306EAFB3.0SE02 was slightly below the lower control limit indicating a similar potentially low bias to the GRO result for this sample. The laboratory estimated result should be considered a low bias estimate (J-). This sample had a moisture content of 73.8%. The moisture in the samples has the effect of diluting the methanol preservative extract and lowering the indicated recovery. This is typical method performance for high moisture content samples analyzed by the AK101 methodology.

Surrogate recovery for spiked compound Terphenyl-d14 in SW8270C semi-volatiles sample 071306EAFB3.0SE02 was slightly above the upper control limit. None of the SW8270C target analytes were detected in this sample; there is no impact of the results due to the high surrogate recovery.

The laboratory report had no other indications of data quality anomalies which might adversely impact the usability of the results.

Based on the laboratory analysis for the target contaminants, no contaminates were identified which exceeded the Alaska Department of Environmental Conservation's regulatory limits. Due to the limited number of samples collected, the sampling results should be regarded as a screening tool only, and may not be representative of actual sediment conditions at the dam sites.

Attachments

Attachment 1

SOP: Sediment Sampling Using a Core Sampler

STANDARD OPERATING PROCEDURE

Subject: Sediment Sampling using a Core Sampler

1. PURPOSE

The purpose of this document is to provide the methods and procedures for collecting sediment samples using sediment/gravity core samplers. These samplers are usually used to collect intact sediment cores in shallow waters. However, they can be mounted onto deep-water drill rigs or similar systems.

2. SCOPE

This procedure is applicable to all Shaw E & I projects where sediment core samples will be collected.

3. REFERENCES

- U.S. Army Corps of Engineers, 2001, *Requirements for the Preparation of Sampling and Analysis Plans,* Appendix C, Section C.6, EM200-1-3, Washington, D.C.
- Wildlife Supply Company (WILDCO) web-site at http://www.wildco.com/

4. DEFINITIONS

- **Sediment/Gravity Core Sampler**—A sampling device consisting of a hollow metal tube with a tapered nose-piece collar and a check valve system. The check valve allows water to flow through the sampler body on descent and prevents wash-out of the sample as it is retrieved. The tube is divided lengthwise and accepts a brass or plastic insert sleeve that actually holds the sample. The sampler can be attached to an extension handle and/or drive hammer.

5. RESPONSIBILITIES

5.1 Procedure Responsibility

The Field Sampling Discipline Lead is responsible for maintenance, management, and revision of this procedure. Questions, comments, or suggestions regarding this technical SOP should be directed to the Field Sampling Discipline Lead.

5.2 Project Responsibility

Shaw employees performing this task, or any portion thereof, are responsible for meeting the requirements of this procedure. Shaw employees conducting technical review of task performance are also responsible for following appropriate portions of this SOP.

For those projects where the activities of this SOP are conducted, the Project Manager, or designee, is responsible for ensuring that those activities are conducted in accordance with this and other appropriate procedures. Project participants are responsible for documenting information in sufficient detail to provide objective documentation (i.e. checkprints, calculations, reports, etc.) that the requirements of this SOP have been met. Such documentation shall be retained as project records.

6. PROCEDURE

Safety Notes: Always use proper life-saving equipment when sampling from a boat or barge. Consult the project HASP for requirements.

6.1 Equipment

The following equipment is used for collecting sediment samples with a core sampler:

- Decontaminated commercial sediment/gravity corer with extension handle(s), stainless steel construction for trace environmental sampling
- Brass or plastic sleeves—consult project plan
- Drive hammer, if required
- Plastic sheeting to keep emptying area clean
- Carpenter's chalk or duct/electrical tape
- Plastic or metal shallow pan to empty sampler into

6.2 Sampling Procedure

The procedure for collecting sediment samples with a core sampler is as follows:

- Don a pair of clean gloves.
- Place plastic sheeting around the area where the sampler will be emptied to keep sampled material in place.
- Assemble the sampler by placing an insert sleeve into the tube and attaching the nose-piece and top collar (usually done with screw threads)
- Attach to an extension or drive hammer system with sufficient length to reach the bottom plus 2 to 3X the sampler length. Mark the extension at the point equal to the water depth plus the length of the corer tube and nose-piece above the bottom of the corer.
- Slowly lower the sampler until the bottom is felt.
- Make sure that the handle/extension is straight up and push down in a straight direction to force the sampler into the bottom sediment. If using a drive hammer, be sure that the system is straight during each drive.
- Continue to push/drive the sampler until the mark of the extension is at water level indicating that the entire sampler has been driven into the sediment.
- Withdraw the sampler by pulling straight up. It may be necessary to twist slightly while pulling.
- Retrieve the sampler from the water and place the corer body into the shallow pan.
- Disassemble the sampler and retrieve the sleeve. Place Teflon™ tape over each end and cap. Label the ends Top and Bottom (T/B).
- Clean and dry the sleeve; then attach a completed sample label, document the sample, and place it into an appropriate container.
- Decontaminate the sampler

7. ATTACHMENTS

None.

8. FORMS

None.

Attachment 2

SOP: Decontaminations of Contact Sampling Equipment

STANDARD OPERATING PROCEDURE

Subject: Decontamination of Contact Sampling Equipment

1. PURPOSE

This procedure defines the Shaw E & I standard that must be implemented for decontamination of contact sampling equipment. Contact sampling equipment is equipment that comes in direct contact with the sample or portion of sample that will undergo chemical analyses or physical testing. This SOP is intended to provide minimum guidelines and general procedures for decontaminating contact sampling equipment used during field sampling activities. The benefits of its use include the following:

- Minimizing the spread of contaminants within a study area and from site to site
- Reducing the potential for worker exposure by means of contact with contaminated sampling equipment
- Improved data quality and reliability

2. SCOPE

This procedure applies to all instances where non-disposable direct contact sampling equipment is utilized for sample collection. This procedure is not intended to address decontamination of peristaltic or other sampling pumps and tubing. The steps outlined in this procedure must be executed between each distinct sample data point.

3. REFERENCES

- U.S. Environmental Protection Agency, Region 4, 2001, *Environmental Investigations Standard Operating Procedures and Quality Assurance Manual*, 980 College Station Road, Athens, Georgia. November.
- US Army Corp of Engineers, Washington, D.C., 2001, Requirements for the Preparation of Sampling and Analysis Plans (EM-200-1-3), February.

4. DEFINITIONS

- **Soap**—A standard brand of phosphate-free laboratory detergent, such as Liquinox®.
- **Organic Desorbing Agent**—A solvent used for removing organic compounds. The specific solvent would depend upon the type of organic compound to be removed. See Attachment 1 for recommendations.
- **Inorganic Desorbing Agent**—An acid solution for use in removing trace metal compounds. The specific acid solution would depend upon the type of inorganic compound to be removed. See Attachment 1 for recommendations.
- **Tap water**—Water obtained from any municipal water treatment system. An untreated potable water supply can be used as a substitute for tap water if the water does not contain the constituents of concern.

- **Analyte-free water (deionized water)**—Water that has been treated by passing through a standard deionizing resin column, and for organics either distillation or activated carbon units. At a minimum, the finished water should contain no detectable heavy metals or other inorganic compounds, and/or no detectable organic compounds (i.e., at or above analytical detection limits). Analyte-free water obtained by other methods is acceptable, as long as it meets the above analytical criteria.

  Other solvents may be substituted for a particular purpose if required. For example, removal of concentrated waste materials may require the use of either pesticide-grade hexane or petroleum ether. After the waste material is removed, the equipment must be subjected to the standard cleaning procedure. Because these solvents are not miscible with water, the equipment must be completely dry prior to use.

5. RESPONSIBILITIES

5.1 Procedure Responsibility

The Field Sampling Discipline Lead is responsible for maintenance, management, and revision of this procedure. Questions, comments, or suggestions regarding this technical SOP should be sent to the Field Sampling Discipline Lead.

5.2 Project Responsibility

Shaw employees performing this task, or any portion thereof, are responsible for meeting the requirements of this procedure. Shaw employees conducting technical review of task performance are also responsible for following appropriate portions of this SOP.

For those projects where the activities of this SOP are conducted, the Project Manager, or designee, is responsible for ensuring that those activities are conducted in accordance with this and other appropriate procedures. Project participants are responsible for documenting information in sufficient detail to provide objective documentation (i.e. checkprints, calculations, reports, etc.) that the requirements of this SOP have been met. Such documentation shall be retained as project records.

6. PROCEDURE

6.1 Health and Safety

Minimum Health and Safety Procedures should be implemented based on the site-specific decontamination protocol that is designed. Health and Safety procedures should take into consideration the potential use of either dangerous solvents or corrosive liquids.

6.2 Implementation

A decontamination area should be established. A separate tub needs to be available for each of the first four steps. Each type of water and soap solution can be placed in hand-held sprayers made of an inert material. The analyte-free water needs to be placed in a container that will be free of any compounds of concern. Special containers will be needed if solvents or acid solutions are used. For example, an acid solution cannot be placed in a sprayer that has any metal parts that will come in contact with the acid solution.

The minimum steps for decontamination are as follows:

1. Remove particulate matter and other surface debris using appropriate tools such as a brush or hand-held sprayer filled with tap water.

2. Scrub the surfaces of the contact sampling equipment using tap water and soap solution and a second brush made of inert material.

3. Rinse contact sampling equipment thoroughly with tap water.

4. Rinse contact sampling equipment thoroughly with analyte-free water (not necessary if sampling for disposal profiling purposes).

5. Place contact sampling equipment on a clean surface appropriate for the compounds of concern and allow to air dry.

It is Shaw E & I policy to containerize all decontamination fluids. This policy will be followed unless an the client specifically directs an alternate procedure in writing.

The use of solvents and/or acid solutions will be dependent on the site-specific conditions. A site with a high probability of high concentrations of compounds or with waste material present will require additional decontamination procedures. Attachment 1 provides some guidance for additional decontamination procedures.

7. ATTACHMENTS

- **Attachment 1**—Recommended Decontamination Procedures.

8. FORMS

None.

ATTACHMENT 1
RECOMMENDED DECONTAMINATION PROCEDURES

Compound	Detergent Wash	Tap Water	Inorganic Desorbing Agent	Tap Water	Organic Desorbing Agent[1]	Deionized Water	Air Dry
Organics							
Volatile Organic Compounds	✓	✓			Methanol Purge & Trap grade	✓	✓
Base Neutrals/Acid Extractables/PCBs/Pesticides	✓	✓			Hexane	✓	✓
Organic Bases[2]	✓	✓	1% nitric acid	✓	Isopropyl Alcohol	✓	✓
Organic Acids[3]	✓	✓	1% nitric acid		Isopropyl Alcohol	✓	✓
Inorganics							
Trace Metals and Radio Isotopes	✓	✓	10% Nitric acid -Trace metals grade	✓		✓	✓
Cations/Anions	✓	✓				✓	✓
Acidic Compounds	✓	✓				✓	✓
Basic Compounds (caustic)	✓	✓	1% nitric acid	✓		✓	✓

1 – All organic solvents must be Pesticide Grade or better. The selection of appropriate solvent rinses should first consider if a *known or suspected* contaminant requires removal from sampling equipment. Secondly, identify whether the subsequent analytical protocol would be impacted by the proposed solvent or an impurity thereof (e.g., residual acetone present in isopropyl alcohol would be measured with certain volatile organics analysis).

2 - Organic bases include amines, hydrazines.

3 - Organic acids include phenols, thiols, nitro and sulfonic compounds.

Adapted from: Appendix E, Requirements for the Preparation of Sampling and Analysis Plans (EM-200-1-3), February 2001. US Army Corp of Engineers, Washington, D.C.

Attachment 3

Data Quality Objectives: SVOCs (SW8270C)

SGS Environmental Services Inc.
200 W. Potter Drive, Anchorage, AK 99518
phone (907) 562-2343, fax (907) 561-5301

SVOC SW8270 (S)

ACODE: XM.8270..2

MATRIX: Soil/Solid

Method	Analyte	MDL	PQL		Regulated Low	Regulated High	Recovery Limits		RPD Limit
SW8270C	N-Nitrosodimethylamine	0.078	0.25	mg/Kg			44	97	30
SW8270C	Aniline	0.078	0.25	mg/Kg			30	134	30
SW8270C	Phenol	0.078	0.25	mg/Kg			40	100	30
SW8270C	Bis(2-Chloroethyl)ether	0.078	0.25	mg/Kg			46	105	30
SW8270C	2-Chlorophenol	0.078	0.25	mg/Kg			48	95	30
SW8270C	1,3-Dichlorobenzene	0.078	0.25	mg/Kg			47	95	30
SW8270C	1,4-Dichlorobenzene	0.078	0.25	mg/Kg			46	95	30
SW8270C	Benzyl alcohol	0.078	0.25	mg/Kg			50	107	30
SW8270C	1,2-Dichlorobenzene	0.078	0.25	mg/Kg			48	95	30
SW8270C	2-Methylphenol (o-Cresol)	0.078	0.25	mg/Kg			46	105	30
SW8270C	Bis(2chloro1methylethyl)Et	0.078	0.25	mg/Kg			26	115	30
SW8270C	3&4-Methylphenol (p&m-Cr	0.094	0.3	mg/Kg			48	105	30
SW8270C	N-Nitroso-di-n-propylamine	0.078	0.25	mg/Kg			53	115	30
SW8270C	Hexachloroethane	0.078	0.25	mg/Kg			46	97	30
SW8270C	Nitrobenzene	0.078	0.25	mg/Kg			48	107	30
SW8270C	Isophorone	0.078	0.25	mg/Kg			47	110	30
SW8270C	2-Nitrophenol	0.078	0.25	mg/Kg			52	100	30
SW8270C	2,4-Dimethylphenol	0.078	0.25	mg/Kg			49	105	30
SW8270C	Benzoic acid	0.31	1	mg/Kg			10	69	30
SW8270C	Bis(2-Chloroethoxy)methan	0.078	0.25	mg/Kg			47	110	30
SW8270C	1,2,4-Trichlorobenzene	0.078	0.25	mg/Kg			52	100	30
SW8270C	Naphthalene	0.078	0.25	mg/Kg			61	100	30
SW8270C	4-Chloroaniline	0.078	0.25	mg/Kg			25	95	30
SW8270C	Hexachlorobutadiene	0.078	0.25	mg/Kg			54	110	30
SW8270C	4-Chloro-3-methylphenol	0.078	0.25	mg/Kg			50	113	30
SW8270C	2,4-Dichlorophenol	0.078	0.25	mg/Kg			52	101	30
SW8270C	2-Methylnaphthalene	0.078	0.25	mg/Kg			56	105	30
SW8270C	Hexachlorocyclopentadiene	0.31	1	mg/Kg			36	120	30
SW8270C	2,4,6-Trichlorophenol	0.078	0.25	mg/Kg			62	110	30
SW8270C	2,4,5-Trichlorophenol	0.078	0.25	mg/Kg			64	109	30
SW8270C	2-Chloronaphthalene	0.078	0.25	mg/Kg			54	105	30
SW8270C	2-Nitroaniline	0.078	0.25	mg/Kg			71	120	30
SW8270C	Dimethylphthalate	0.078	0.25	mg/Kg			70	110	30
SW8270C	Acenaphthylene	0.078	0.25	mg/Kg			64	105	30
SW8270C	2,6-Dinitrotoluene	0.078	0.25	mg/Kg			68	110	30
SW8270C	3-Nitroaniline	0.078	0.25	mg/Kg			65	125	30
SW8270C	Acenaphthene	0.078	0.25	mg/Kg			64	110	30
SW8270C	2,4-Dinitrophenol	0.62	2	mg/Kg			63	110	30
SW8270C	4-Nitrophenol	0.31	1	mg/Kg			55	116	30
SW8270C	Dibenzofuran	0.078	0.25	mg/Kg			61	105	30
SW8270C	2,4-Dinitrotoluene	0.078	0.25	mg/Kg			63	115	30
SW8270C	Diethylphthalate	0.078	0.25	mg/Kg			63	110	30
SW8270C	4-Chlorophenyl-phenylether	0.078	0.25	mg/Kg			60	110	30
SW8270C	Fluorene	0.078	0.25	mg/Kg			72	110	30
SW8270C	4-Nitroaniline	0.15	0.5	mg/Kg			71	115	30
SW8270C	2-Methyl-4,6-dinitrophenol	0.62	2	mg/Kg			67	116	30
SW8270C	N-Nitrosodiphenylamine	0.078	0.25	mg/Kg			66	108	30

NOTE: Detection Limits and Control Limits are subject to change as per the requirements of the SGS QAP. The detection limits presented are dynamic and are subject to change based on sample mass and/or matrix interference.

11 of Jul, 2006

SGS Environmental Services Inc.
200 W. Potter Drive, Anchorage, AK 99518
phone (907) 562-2343, fax (907) 561-5301

SVOC SW8270 (S)

ACODE: XM.8270..2

MATRIX: Soil/Solid

Method	Analyte	MDL	PQL		Regulated Low	Regulated High	Recovery Limits		RPD Limit
SW8270C	4-Bromophenyl-phenylether	0.078	0.25	mg/Kg			60	104	30
SW8270C	Hexachlorobenzene	0.078	0.25	mg/Kg			64	120	30
SW8270C	Pentachlorophenol	0.31	1	mg/Kg			59	109	30
SW8270C	Phenanthrene	0.078	0.25	mg/Kg			69	110	30
SW8270C	Anthracene	0.078	0.25	mg/Kg			69	105	30
SW8270C	Di-n-butylphthalate	0.078	0.25	mg/Kg			69	110	30
SW8270C	Fluoranthene	0.078	0.25	mg/Kg			69	115	30
SW8270C	Pyrene	0.078	0.25	mg/Kg			64	125	30
SW8270C	Azobenzene	0.078	0.25	mg/Kg			59	138	30
SW8270C	Butylbenzylphthalate	0.078	0.25	mg/Kg			67	125	30
SW8270C	3,3-Dichlorobenzidine	0.078	0.25	mg/Kg			58	119	30
SW8270C	Benzo(a)Anthracene	0.078	0.25	mg/Kg			65	110	30
SW8270C	Chrysene	0.078	0.25	mg/Kg			67	110	30
SW8270C	bis(2-Ethylhexyl)phthalate	0.078	0.25	mg/Kg			72	125	30
SW8270C	di-n-Octylphthalate	0.078	0.25	mg/Kg			63	130	30
SW8270C	Benzo[b]Fluoranthene	0.078	0.25	mg/Kg			52	115	30
SW8270C	Benzo[k]fluoranthene	0.078	0.25	mg/Kg			66	125	30
SW8270C	Benzo[a]pyrene	0.078	0.25	mg/Kg			69	110	30
SW8270C	Indeno[1,2,3-c,d] pyrene	0.078	0.25	mg/Kg			64	125	30
SW8270C	Dibenzo[a,h]anthracene	0.078	0.25	mg/Kg			69	125	30
SW8270C	Benzo[g,h,i]perylene	0.078	0.25	mg/Kg			55	125	30
SW8270C	2-Fluorophenol <surr>	0	0	mg/Kg			37	105	
SW8270C	Phenol-d6 <surr>	0	0	mg/Kg			40	100	
SW8270C	Nitrobenzene-d5 <surr>	0	0	mg/Kg			37	100	
SW8270C	2-Fluorobiphenyl <surr>	0	0	mg/Kg			45	120	
SW8270C	2,4,6-Tribromophenol <surr	0	0	mg/Kg			36	125	
SW8270C	Terphenyl-d14 <surr>	0	0	mg/Kg			32	120	

NOTE: Detection Limits and Control Limits are subject to change as per the requirements of the SGS QAP. The detection limits presented are dynamic and are subject to change based on sample mass and/or matrix interference.

Attachment 4

Laboratory Analysis Report

Laboratory Analysis Report

200 W. Potter Drive
Anchorage, AK 99518-1605
Tel: (907) 562-2343
Fax: (907) 561-5301
Web: http://www.us.sgs.com

Larua Noland
Shaw Env & Infrastructure Inc.
2000 W Int'l Airport Suite C1
Anchorage, AK 99502

Work Order:	1063868	
	Ship Creek Dam RFS 121611	**Released by:**
Client:	Shaw Env & Infrastructure Inc.	Steven R. Crupi
Report Date:	August 02, 2006	2006.08.02 14:53:16 - 08'00'

Enclosed are the analytical results associated with the above workorder.

As required by the state of Alaska and the USEPA, a formal Quality Assurance/Quality Control Program is maintained by SGS. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request.

The laboratory certification numbers are AK971-05 (DW), UST-005 (CS) and AK00971 (Micro) for ADEC and 001543 for NELAP.

Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP, the National Environmental Laboratory Accreditation Program and, when applicable, other regulatory authorities.

If you have any questions regarding this report or if we can be of any other assistance, please contact your SGS Project Manager at 907-562-2343.

The following descriptors may be found on your report which will serve to further qualify the data.

PQL	Practical Quantitation Limit (reporting limit).
U	Indicates the analyte was analyzed for but not detected.
F	Indicates value that is greater than or equal to the MDL.
J	The quantitation is an estimation.
ND	Indicates the analyte is not detected.
B	Indicates the analyte is found in a blank associated with the sample.
*	The analyte has exceeded allowable regulatory or control limits.
GT	Greater Than
D	The analyte concentration is the result of a dilution.
LT	Less Than
!	Surrogate out of control limits.
Q	QC parameter out of acceptance range.
M	A matrix effect was present.
JL	The analyte was positively identified, but the quantitation is a low estimation.
E	The analyte result is above the calibrated range.

Note: Soil samples are reported on a dry weight basis unless otherwise specified.

SGS

SGS Ref.#	1063868001	**All Dates/Times are Alaska Standard Time**	
Client Name	Shaw Env & Infrastructure Inc.	**Printed Date/Time**	08/02/2006 14:51
Project Name/#	Ship Creek Dam RFS 121611	**Collected Date/Time**	07/13/2006 10:40
Client Sample ID	071306FTR3.0SE01	**Received Date/Time**	07/13/2006 13:25
Matrix	Soil/Solid	**Technical Director**	**Stephen C. Ede**
Location/Well ID	FTR		

Sample Remarks:

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Fuels Department									
Gasoline Range Organics	ND	1860	ug/Kg	AK101	A		07/13/06	07/18/06	DNA
Surrogates									
4-Bromofluorobenzene <surr>	59.1		%	AK101	A	50-150	07/13/06	07/18/06	DNA
Semivolatile Organic Fuels Department									
Diesel Range Organics	4.40 J	25.0	mg/Kg	AK102/103	B		07/17/06	07/18/06	JE
Residual Range Organics	14.7 J	25.0	mg/Kg	AK102/103	B		07/17/06	07/18/06	JE
Surrogates									
5a Androstane <surr>	68.1		%	AK102/103	B	50-150	07/17/06	07/18/06	JE
n-Triacontane-d62 <surr>	94.6		%	AK102/103	B	50-150	07/17/06	07/18/06	JE
Polychlorinated Biphenyls									
Aroclor-1016	ND	61.7	ug/Kg	SW8082	B		07/21/06	07/21/06	WAA
Aroclor-1221	ND	61.7	ug/Kg	SW8082	B		07/21/06	07/21/06	WAA
Aroclor-1232	ND	61.7	ug/Kg	SW8082	B		07/21/06	07/21/06	WAA
Aroclor-1242	ND	61.7	ug/Kg	SW8082	B		07/21/06	07/21/06	WAA
Aroclor-1248	ND	61.7	ug/Kg	SW8082	B		07/21/06	07/21/06	WAA
Aroclor-1254	ND	61.7	ug/Kg	SW8082	B		07/21/06	07/21/06	WAA
Aroclor-1260	ND	61.7	ug/Kg	SW8082	B		07/21/06	07/21/06	WAA
Surrogates									
Decachlorobiphenyl <surr>	84.7		%	SW8082	B	60-125	07/21/06	07/21/06	WAA
Semivolatile Organic GC/MS									

SGS

SGS Ref.#	1063868001
Client Name	Shaw Env & Infrastructure Inc.
Project Name/#	Ship Creek Dam RFS 121611
Client Sample ID	071306FTR3.0SE01
Matrix	Soil/Solid
Location/Well ID	FTR

All Dates/Times are Alaska Standard Time

Printed Date/Time	08/02/2006 14:51
Collected Date/Time	07/13/2006 10:40
Received Date/Time	07/13/2006 13:25
Technical Director	**Stephen C. Ede**

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Semivolatile Organic GC/MS									
N-Nitrosodimethylamine	ND	0.312	mg/Kg	SW8270C	B		07/24/06	07/30/06	KWM
Aniline	ND	0.312	mg/Kg	SW8270C	B		07/24/06	07/30/06	KWM
Phenol	ND	0.312	mg/Kg	SW8270C	B		07/24/06	07/30/06	KWM
Bis(2-Chloroethyl)ether	ND	0.312	mg/Kg	SW8270C	B		07/24/06	07/30/06	KWM
2-Chlorophenol	ND	0.312	mg/Kg	SW8270C	B		07/24/06	07/30/06	KWM
1,3-Dichlorobenzene	ND	0.312	mg/Kg	SW8270C	B		07/24/06	07/30/06	KWM
1,4-Dichlorobenzene	ND	0.312	mg/Kg	SW8270C	B		07/24/06	07/30/06	KWM
Benzyl alcohol	ND	0.312	mg/Kg	SW8270C	B		07/24/06	07/30/06	KWM
1,2-Dichlorobenzene	ND	0.312	mg/Kg	SW8270C	B		07/24/06	07/30/06	KWM
2-Methylphenol (o-Cresol)	ND	0.312	mg/Kg	SW8270C	B		07/24/06	07/30/06	KWM
Bis(2chloro1methylethyl)Ether	ND	0.312	mg/Kg	SW8270C	B		07/24/06	07/30/06	KWM
3&4-Methylphenol (p&m-Cresol)	ND	0.374	mg/Kg	SW8270C	B		07/24/06	07/30/06	KWM
N-Nitroso-di-n-propylamine	ND	0.312	mg/Kg	SW8270C	B		07/24/06	07/30/06	KWM
Hexachloroethane	ND	0.312	mg/Kg	SW8270C	B		07/24/06	07/30/06	KWM
Nitrobenzene	ND	0.312	mg/Kg	SW8270C	B		07/24/06	07/30/06	KWM
Isophorone	ND	0.312	mg/Kg	SW8270C	B		07/24/06	07/30/06	KWM
2-Nitrophenol	ND	0.312	mg/Kg	SW8270C	B		07/24/06	07/30/06	KWM
2,4-Dimethylphenol	ND	0.312	mg/Kg	SW8270C	B		07/24/06	07/30/06	KWM
Benzoic acid	ND	1.25	mg/Kg	SW8270C	B		07/24/06	07/30/06	KWM
Bis(2-Chloroethoxy)methane	ND	0.312	mg/Kg	SW8270C	B		07/24/06	07/30/06	KWM
1,2,4-Trichlorobenzene	ND	0.312	mg/Kg	SW8270C	B		07/24/06	07/30/06	KWM
Naphthalene	ND	0.312	mg/Kg	SW8270C	B		07/24/06	07/30/06	KWM
4-Chloroaniline	ND	0.312	mg/Kg	SW8270C	B		07/24/06	07/30/06	KWM
Hexachlorobutadiene	ND	0.312	mg/Kg	SW8270C	B		07/24/06	07/30/06	KWM
4-Chloro-3-methylphenol	ND	0.312	mg/Kg	SW8270C	B		07/24/06	07/30/06	KWM
2,4-Dichlorophenol	ND	0.312	mg/Kg	SW8270C	B		07/24/06	07/30/06	KWM
2-Methylnaphthalene	ND	0.312	mg/Kg	SW8270C	B		07/24/06	07/30/06	KWM
Hexachlorocyclopentadiene	ND	1.25	mg/Kg	SW8270C	B		07/24/06	07/30/06	KWM
2,4,6-Trichlorophenol	ND	0.312	mg/Kg	SW8270C	B		07/24/06	07/30/06	KWM
2,4,5-Trichlorophenol	ND	0.312	mg/Kg	SW8270C	B		07/24/06	07/30/06	KWM

SGS

SGS Ref.#	1063868001
Client Name	Shaw Env & Infrastructure Inc.
Project Name/#	Ship Creek Dam RFS 121611
Client Sample ID	071306FTR3.0SE01
Matrix	Soil/Solid
Location/Well ID	FTR

All Dates/Times are Alaska Standard Time

Printed Date/Time	08/02/2006 14:51
Collected Date/Time	07/13/2006 10:40
Received Date/Time	07/13/2006 13:25
Technical Director	**Stephen C. Ede**

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Semivolatile Organic GC/MS									
2-Chloronaphthalene	ND	0.312	mg/Kg	SW8270C	B		07/24/06	07/30/06	KWM
2-Nitroaniline	ND	0.312	mg/Kg	SW8270C	B		07/24/06	07/30/06	KWM
Dimethylphthalate	ND	0.312	mg/Kg	SW8270C	B		07/24/06	07/30/06	KWM
Acenaphthylene	ND	0.312	mg/Kg	SW8270C	B		07/24/06	07/30/06	KWM
2,6-Dinitrotoluene	ND	0.312	mg/Kg	SW8270C	B		07/24/06	07/30/06	KWM
3-Nitroaniline	ND	0.312	mg/Kg	SW8270C	B		07/24/06	07/30/06	KWM
Acenaphthene	ND	0.312	mg/Kg	SW8270C	B		07/24/06	07/30/06	KWM
2,4-Dinitrophenol	ND	2.49	mg/Kg	SW8270C	B		07/24/06	07/30/06	KWM
4-Nitrophenol	ND	1.25	mg/Kg	SW8270C	B		07/24/06	07/30/06	KWM
Dibenzofuran	ND	0.312	mg/Kg	SW8270C	B		07/24/06	07/30/06	KWM
2,4-Dinitrotoluene	ND	0.312	mg/Kg	SW8270C	B		07/24/06	07/30/06	KWM
Diethylphthalate	ND	0.312	mg/Kg	SW8270C	B		07/24/06	07/30/06	KWM
4-Chlorophenyl-phenylether	ND	0.312	mg/Kg	SW8270C	B		07/24/06	07/30/06	KWM
Fluorene	ND	0.312	mg/Kg	SW8270C	B		07/24/06	07/30/06	KWM
4-Nitroaniline	ND	0.624	mg/Kg	SW8270C	B		07/24/06	07/30/06	KWM
2-Methyl-4,6-dinitrophenol	ND	2.49	mg/Kg	SW8270C	B		07/24/06	07/30/06	KWM
N-Nitrosodiphenylamine	ND	0.312	mg/Kg	SW8270C	B		07/24/06	07/30/06	KWM
4-Bromophenyl-phenylether	ND	0.312	mg/Kg	SW8270C	B		07/24/06	07/30/06	KWM
Hexachlorobenzene	ND	0.312	mg/Kg	SW8270C	B		07/24/06	07/30/06	KWM
Pentachlorophenol	ND	1.25	mg/Kg	SW8270C	B		07/24/06	07/30/06	KWM
Phenanthrene	ND	0.312	mg/Kg	SW8270C	B		07/24/06	07/30/06	KWM
Anthracene	ND	0.312	mg/Kg	SW8270C	B		07/24/06	07/30/06	KWM
Di-n-butylphthalate	ND	0.312	mg/Kg	SW8270C	B		07/24/06	07/30/06	KWM
Fluoranthene	0.152 J	0.312	mg/Kg	SW8270C	B		07/24/06	07/30/06	KWM
Pyrene	0.261 J	0.312	mg/Kg	SW8270C	B		07/24/06	07/30/06	KWM
Azobenzene	ND	0.312	mg/Kg	SW8270C	B		07/24/06	07/30/06	KWM
Butylbenzylphthalate	ND	0.312	mg/Kg	SW8270C	B		07/24/06	07/30/06	KWM
3,3-Dichlorobenzidine	ND	0.312	mg/Kg	SW8270C	B		07/24/06	07/30/06	KWM
Benzo(a)Anthracene	ND	0.312	mg/Kg	SW8270C	B		07/24/06	07/30/06	KWM
Chrysene	0.127 J	0.312	mg/Kg	SW8270C	B		07/24/06	07/30/06	KWM

SGS

SGS Ref.#	1063868001
Client Name	Shaw Env & Infrastructure Inc.
Project Name/#	Ship Creek Dam RFS 121611
Client Sample ID	071306FTR3.0SE01
Matrix	Soil/Solid
Location/Well ID	FTR

All Dates/Times are Alaska Standard Time

Printed Date/Time	08/02/2006 14:51
Collected Date/Time	07/13/2006 10:40
Received Date/Time	07/13/2006 13:25
Technical Director	**Stephen C. Ede**

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Semivolatile Organic GC/MS									
bis(2-Ethylhexyl)phthalate	ND	0.312	mg/Kg	SW8270C	B		07/24/06	07/30/06	KWM
di-n-Octylphthalate	ND	0.312	mg/Kg	SW8270C	B		07/24/06	07/30/06	KWM
Benzo[b]Fluoranthene	ND	3.12	mg/Kg	SW8270C	B		07/24/06	07/28/06	KWM
Benzo[k]fluoranthene	ND	3.12	mg/Kg	SW8270C	B		07/24/06	07/28/06	KWM
Benzo[a]pyrene	ND	3.12	mg/Kg	SW8270C	B		07/24/06	07/28/06	KWM
Indeno[1,2,3-c,d] pyrene	ND	3.12	mg/Kg	SW8270C	B		07/24/06	07/28/06	KWM
Dibenzo[a,h]anthracene	ND	3.12	mg/Kg	SW8270C	B		07/24/06	07/28/06	KWM
Benzo[g,h,i]perylene	ND	3.12	mg/Kg	SW8270C	B		07/24/06	07/28/06	KWM
Surrogates									
2-Fluorophenol <surr>	83.4		%	SW8270C	B	37-105	07/24/06	07/30/06	KWM
Phenol-d6 <surr>	93.4		%	SW8270C	B	40-100	07/24/06	07/30/06	KWM
Nitrobenzene-d5 <surr>	84.1		%	SW8270C	B	37-100	07/24/06	07/30/06	KWM
2-Fluorobiphenyl <surr>	92		%	SW8270C	B	45-120	07/24/06	07/30/06	KWM
2,4,6-Tribromophenol <surr>	77.1		%	SW8270C	B	36-125	07/24/06	07/30/06	KWM
Terphenyl-d14 <surr>	85.1		%	SW8270C	B	32-120	07/24/06	07/28/06	KWM
Solids									
Total Solids	79.6		%	SM20 2540G	B			07/19/06	JC

SGS

SGS Ref.#	1063868002
Client Name	Shaw Env & Infrastructure Inc.
Project Name/#	Ship Creek Dam RFS 121611
Client Sample ID	071306EAFB3.0SE02
Matrix	Soil/Solid
Location/Well ID	EAFB

All Dates/Times are Alaska Standard Time

Printed Date/Time	08/02/2006 14:51
Collected Date/Time	07/13/2006 12:35
Received Date/Time	07/13/2006 13:25
Technical Director	**Stephen C. Ede**

Sample Remarks:

GRO/BTEX - BFB surrogate recovery is biased low. The recovery adjusted for moisture content is 73.8%. Sample was run twice for confirmation.

RRO - Unknown hydrocarbon with several peaks is present.

8270 - The recovery for the surrogate terphenyl-d14 is outside QC goals(biased high). All other surrogates met recovery goals.

Parameter	Results		PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Fuels Department										
Gasoline Range Organics	766 J		3180	ug/Kg	AK101	A		07/20/06	07/20/06	DNA
Surrogates										
4-Bromofluorobenzene <surr>	47.1	!		%	AK101	A	50-150	07/20/06	07/20/06	DNA
Semivolatile Organic Fuels Department										
Diesel Range Organics	57.3 J		124	mg/Kg	AK102/103	B		07/17/06	07/21/06	JE
Residual Range Organics	381		124	mg/Kg	AK102/103	B		07/17/06	07/21/06	JE
Surrogates										
5a Androstane <surr>	95.7			%	AK102/103	B	50-150	07/17/06	07/21/06	JE
n-Triacontane-d62 <surr>	80.3			%	AK102/103	B	50-150	07/17/06	07/21/06	JE
Polychlorinated Biphenyls										
Aroclor-1016	ND		76.8	ug/Kg	SW8082	B		07/21/06	07/21/06	WAA
Aroclor-1221	ND		76.8	ug/Kg	SW8082	B		07/21/06	07/21/06	WAA
Aroclor-1232	ND		76.8	ug/Kg	SW8082	B		07/21/06	07/21/06	WAA
Aroclor-1242	ND		76.8	ug/Kg	SW8082	B		07/21/06	07/21/06	WAA
Aroclor-1248	ND		76.8	ug/Kg	SW8082	B		07/21/06	07/21/06	WAA
Aroclor-1254	ND		76.8	ug/Kg	SW8082	B		07/21/06	07/21/06	WAA
Aroclor-1260	ND		76.8	ug/Kg	SW8082	B		07/21/06	07/21/06	WAA
Surrogates										
Decachlorobiphenyl <surr>	80.4			%	SW8082	B	60-125	07/21/06	07/21/06	WAA

SGS

SGS Ref.#	1063868002
Client Name	Shaw Env & Infrastructure Inc.
Project Name/#	Ship Creek Dam RFS 121611
Client Sample ID	071306EAFB3.0SE02
Matrix	Soil/Solid
Location/Well ID	EAFB

All Dates/Times are Alaska Standard Time

Printed Date/Time	08/02/2006 14:51
Collected Date/Time	07/13/2006 12:35
Received Date/Time	07/13/2006 13:25
Technical Director	**Stephen C. Ede**

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Polychlorinated Biphenyls									
Semivolatile Organic GC/MS									
N-Nitrosodimethylamine	ND	0.385	mg/Kg	SW8270C	B		07/24/06	07/27/06	KWM
Aniline	ND	0.385	mg/Kg	SW8270C	B		07/24/06	07/27/06	KWM
Phenol	ND	0.385	mg/Kg	SW8270C	B		07/24/06	07/27/06	KWM
Bis(2-Chloroethyl)ether	ND	0.385	mg/Kg	SW8270C	B		07/24/06	07/27/06	KWM
2-Chlorophenol	ND	0.385	mg/Kg	SW8270C	B		07/24/06	07/27/06	KWM
1,3-Dichlorobenzene	ND	0.385	mg/Kg	SW8270C	B		07/24/06	07/27/06	KWM
1,4-Dichlorobenzene	ND	0.385	mg/Kg	SW8270C	B		07/24/06	07/27/06	KWM
Benzyl alcohol	ND	0.385	mg/Kg	SW8270C	B		07/24/06	07/27/06	KWM
1,2-Dichlorobenzene	ND	0.385	mg/Kg	SW8270C	B		07/24/06	07/27/06	KWM
2-Methylphenol (o-Cresol)	ND	0.385	mg/Kg	SW8270C	B		07/24/06	07/27/06	KWM
Bis(2chloro1methylethyl)Ether	ND	0.385	mg/Kg	SW8270C	B		07/24/06	07/27/06	KWM
3&4-Methylphenol (p&m-Cresol)	ND	0.462	mg/Kg	SW8270C	B		07/24/06	07/27/06	KWM
N-Nitroso-di-n-propylamine	ND	0.385	mg/Kg	SW8270C	B		07/24/06	07/27/06	KWM
Hexachloroethane	ND	0.385	mg/Kg	SW8270C	B		07/24/06	07/27/06	KWM
Nitrobenzene	ND	0.385	mg/Kg	SW8270C	B		07/24/06	07/27/06	KWM
Isophorone	ND	0.385	mg/Kg	SW8270C	B		07/24/06	07/27/06	KWM
2-Nitrophenol	ND	0.385	mg/Kg	SW8270C	B		07/24/06	07/27/06	KWM
2,4-Dimethylphenol	ND	0.385	mg/Kg	SW8270C	B		07/24/06	07/27/06	KWM
Benzoic acid	ND	1.54	mg/Kg	SW8270C	B		07/24/06	07/27/06	KWM
Bis(2-Chloroethoxy)methane	ND	0.385	mg/Kg	SW8270C	B		07/24/06	07/27/06	KWM
1,2,4-Trichlorobenzene	ND	0.385	mg/Kg	SW8270C	B		07/24/06	07/27/06	KWM
Naphthalene	ND	0.385	mg/Kg	SW8270C	B		07/24/06	07/27/06	KWM
4-Chloroaniline	ND	0.385	mg/Kg	SW8270C	B		07/24/06	07/27/06	KWM
Hexachlorobutadiene	ND	0.385	mg/Kg	SW8270C	B		07/24/06	07/27/06	KWM
4-Chloro-3-methylphenol	ND	0.385	mg/Kg	SW8270C	B		07/24/06	07/27/06	KWM
2,4-Dichlorophenol	ND	0.385	mg/Kg	SW8270C	B		07/24/06	07/27/06	KWM
2-Methylnaphthalene	ND	0.385	mg/Kg	SW8270C	B		07/24/06	07/27/06	KWM
Hexachlorocyclopentadiene	ND	1.54	mg/Kg	SW8270C	B		07/24/06	07/27/06	KWM

SGS

SGS Ref.#	1063868002
Client Name	Shaw Env & Infrastructure Inc.
Project Name/#	Ship Creek Dam RFS 121611
Client Sample ID	071306EAFB3.0SE02
Matrix	Soil/Solid
Location/Well ID	EAFB

All Dates/Times are Alaska Standard Time

Printed Date/Time	08/02/2006 14:51
Collected Date/Time	07/13/2006 12:35
Received Date/Time	07/13/2006 13:25
Technical Director	**Stephen C. Ede**

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Semivolatile Organic GC/MS									
2,4,6-Trichlorophenol	ND	0.385	mg/Kg	SW8270C	B		07/24/06	07/27/06	KWM
2,4,5-Trichlorophenol	ND	0.385	mg/Kg	SW8270C	B		07/24/06	07/27/06	KWM
2-Chloronaphthalene	ND	0.385	mg/Kg	SW8270C	B		07/24/06	07/27/06	KWM
2-Nitroaniline	ND	0.385	mg/Kg	SW8270C	B		07/24/06	07/27/06	KWM
Dimethylphthalate	ND	0.385	mg/Kg	SW8270C	B		07/24/06	07/27/06	KWM
Acenaphthylene	ND	0.385	mg/Kg	SW8270C	B		07/24/06	07/27/06	KWM
2,6-Dinitrotoluene	ND	0.385	mg/Kg	SW8270C	B		07/24/06	07/27/06	KWM
3-Nitroaniline	ND	0.385	mg/Kg	SW8270C	B		07/24/06	07/27/06	KWM
Acenaphthene	ND	0.385	mg/Kg	SW8270C	B		07/24/06	07/27/06	KWM
2,4-Dinitrophenol	ND	3.08	mg/Kg	SW8270C	B		07/24/06	07/27/06	KWM
4-Nitrophenol	ND	1.54	mg/Kg	SW8270C	B		07/24/06	07/27/06	KWM
Dibenzofuran	ND	0.385	mg/Kg	SW8270C	B		07/24/06	07/27/06	KWM
2,4-Dinitrotoluene	ND	0.385	mg/Kg	SW8270C	B		07/24/06	07/27/06	KWM
Diethylphthalate	ND	0.385	mg/Kg	SW8270C	B		07/24/06	07/27/06	KWM
4-Chlorophenyl-phenylether	ND	0.385	mg/Kg	SW8270C	B		07/24/06	07/27/06	KWM
Fluorene	ND	0.385	mg/Kg	SW8270C	B		07/24/06	07/27/06	KWM
4-Nitroaniline	ND	0.771	mg/Kg	SW8270C	B		07/24/06	07/27/06	KWM
2-Methyl-4,6-dinitrophenol	ND	3.08	mg/Kg	SW8270C	B		07/24/06	07/27/06	KWM
N-Nitrosodiphenylamine	ND	0.385	mg/Kg	SW8270C	B		07/24/06	07/27/06	KWM
4-Bromophenyl-phenylether	ND	0.385	mg/Kg	SW8270C	B		07/24/06	07/27/06	KWM
Hexachlorobenzene	ND	0.385	mg/Kg	SW8270C	B		07/24/06	07/27/06	KWM
Pentachlorophenol	ND	1.54	mg/Kg	SW8270C	B		07/24/06	07/27/06	KWM
Phenanthrene	ND	0.385	mg/Kg	SW8270C	B		07/24/06	07/27/06	KWM
Anthracene	ND	0.385	mg/Kg	SW8270C	B		07/24/06	07/27/06	KWM
Di-n-butylphthalate	ND	0.385	mg/Kg	SW8270C	B		07/24/06	07/27/06	KWM
Fluoranthene	ND	0.385	mg/Kg	SW8270C	B		07/24/06	07/27/06	KWM
Pyrene	ND	0.385	mg/Kg	SW8270C	B		07/24/06	07/27/06	KWM
Azobenzene	ND	0.385	mg/Kg	SW8270C	B		07/24/06	07/27/06	KWM
Butylbenzylphthalate	ND	0.385	mg/Kg	SW8270C	B		07/24/06	07/27/06	KWM
3,3-Dichlorobenzidine	ND	0.385	mg/Kg	SW8270C	B		07/24/06	07/27/06	KWM

SGS

SGS Ref.#	1063868002
Client Name	Shaw Env & Infrastructure Inc.
Project Name/#	Ship Creek Dam RFS 121611
Client Sample ID	071306EAFB3.0SE02
Matrix	Soil/Solid
Location/Well ID	EAFB

All Dates/Times are Alaska Standard Time

Printed Date/Time	08/02/2006 14:51
Collected Date/Time	07/13/2006 12:35
Received Date/Time	07/13/2006 13:25
Technical Director	**Stephen C. Ede**

Parameter	Results		PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Semivolatile Organic GC/MS										
Benzo(a)Anthracene	ND		0.385	mg/Kg	SW8270C	B		07/24/06	07/27/06	KWM
Chrysene	ND		0.385	mg/Kg	SW8270C	B		07/24/06	07/27/06	KWM
bis(2-Ethylhexyl)phthalate	ND		0.385	mg/Kg	SW8270C	B		07/24/06	07/27/06	KWM
di-n-Octylphthalate	ND		0.385	mg/Kg	SW8270C	B		07/24/06	07/27/06	KWM
Benzo[b]Fluoranthene	ND		0.385	mg/Kg	SW8270C	B		07/24/06	07/27/06	KWM
Benzo[k]fluoranthene	ND		0.385	mg/Kg	SW8270C	B		07/24/06	07/27/06	KWM
Benzo[a]pyrene	ND		0.385	mg/Kg	SW8270C	B		07/24/06	07/27/06	KWM
Indeno[1,2,3-c,d] pyrene	ND		0.385	mg/Kg	SW8270C	B		07/24/06	07/27/06	KWM
Dibenzo[a,h]anthracene	ND		0.385	mg/Kg	SW8270C	B		07/24/06	07/27/06	KWM
Benzo[g,h,i]perylene	ND		0.385	mg/Kg	SW8270C	B		07/24/06	07/27/06	KWM
Surrogates										
2-Fluorophenol <surr>	79.6			%	SW8270C	B	37-105	07/24/06	07/27/06	KWM
Phenol-d6 <surr>	87.8			%	SW8270C	B	40-100	07/24/06	07/27/06	KWM
Nitrobenzene-d5 <surr>	72.8			%	SW8270C	B	37-100	07/24/06	07/27/06	KWM
2-Fluorobiphenyl <surr>	83.7			%	SW8270C	B	45-120	07/24/06	07/27/06	KWM
2,4,6-Tribromophenol <surr>	85.9			%	SW8270C	B	36-125	07/24/06	07/27/06	KWM
Terphenyl-d14 <surr>	121	!		%	SW8270C	B	32-120	07/24/06	07/27/06	KWM
Solids										
Total Solids	63.8			%	SM20 2540G	B			07/19/06	JC

SGS

SGS Ref.#	1063868003
Client Name	Shaw Env & Infrastructure Inc.
Project Name/#	Ship Creek Dam RFS 121611
Client Sample ID	VW6-85-6
Matrix	Soil/Solid

All Dates/Times are Alaska Standard Time

Printed Date/Time	08/02/2006 14:51
Collected Date/Time	07/13/2006 10:40
Received Date/Time	07/13/2006 13:25
Technical Director	**Stephen C. Ede**

Sample Remarks:

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Fuels Department									
Gasoline Range Organics	ND	2530	ug/Kg	AK101	A		07/13/06	07/18/06	DNA
Surrogates									
4-Bromofluorobenzene <surr>	87.7		%	AK101	A	50-150	07/13/06	07/18/06	DNA
Solids									
Total Solids	100		%	SM20 2540G	A			07/19/06	JC

Chain of Custody

Project Name: Ship Creek Dam Removal Feasibility Study P/N: 121611

Destination Laboratory: SGS-Anchorage

Sampled by: Shaw

Report to: Shaw Alaska, Inc., Attention: Laura Noland Tel. (907) 243-6300

Invoice to: Shaw Alaska, Inc.; 2000 W. International Airport Rd. Ste C-1; Anchorage, AK 99502

LAB ID	Sample ID	Location ID	Date	Time	Depth	Matrix	QA/QC Sample type	Required Analysis: AK101 - GRO	AK102/103 - DRO/RRO	SW8270C - SVOCs	SW8082 - PCBs	# bottles	MS/MSD Requested?
1 AB	~~07136FTR3.0SE01~~	FTR	07/13/06	10:40	3.0	SE	Primary - 001	X	X	X	X	2	
2 AE	~~07136EAFB3.0SE02~~	EAFB	07/13/06	12:35	3.0	SE	Primary - 001	X	X	X	X	2	
3 A	VW6-85-6		07/13/06				Trip Blank - 001	X				1	
	07136EAFB3.0SE02												

Comments:
Standard Turnaround Time
Level 1 Data Deliverable

1063868

TB=15.6
Cooler temp- 6.1

Relinquished by (Signature)	Date:
John M. Ingold	7/13/06
Printed Name	Time:
John M. Ingold	13:27
Relinquished by (Signature)	Date:
Printed Name	Time:

Received by (Signature)	Date:
Printed Name	Time:
Received by (Signature)	Date:
	7-13-06
Printed Name	Time:
James Johnson	1325

Crupi, Steve (Anchorage)

From: Ingold, John [John.Ingold@shawgrp.com]
Sent: Tuesday, July 18, 2006 7:37 AM
To: Crupi, Steve (Anchorage); Gray, Jason
Cc: Noland, Laura
Subject: RE: Question on Ship Creek Dam Removal samples WO 1063868

Steve: No. Yes, it differs from the quote, but the final decision was not to do PAH SIM. Thanks for asking.

John Ingold, PMP
Client Program Manager
Shaw Alaska, Inc. (Shaw Environmental & Infrastructure)
2000 W. International Airport Road, Suite C-1
Anchorage, Alaska 99502
907-249-6310 Direct
907-249-6300 Main
907-440-6633 Cell
907-243-6301 Fax
www.shawgrp.com

From: Crupi, Steve (Anchorage) [mailto:Steve.Crupi@sgs.com]
Sent: Monday, July 17, 2006 4:55 PM
To: Ingold, John; Gray, Jason
Subject: Question on Ship Creek Dam Removal samples WO 1063868

Should the SVOC on the COC actually be PAH SIM?

Steve

Steven R. Crupi
Project Manager
SGS Environmental Services
Anchorage, AK 99518
(907) 550-3213 (direct)
(907) 562-2343 (general)
(907) 561-5301 (fax)
steve.crupi@sgs.com

From: Long, Alesha (Anchorage)
Sent: Monday, July 17, 2006 4:51 PM
To: Crupi, Steve (Anchorage)
Subject: RE: shaw qt 7799-workorder 1063868

1063868

SGS

SAMPLE RECEIPT FORM

SGS WO#:

Yes	No	NA		
	X		Are samples **RUSH**, priority, or *w/n 72 hrs.* of **hold time**?	**Due Date:** 7/27/06
		X	If yes have you done *e-mail notification*?	**Received Date:** 7/13/06
	X		Are samples *within 24 hrs.* of **hold time** or **due date**?	**Received Time:** 1325
		X	If yes, have you *spoken with* Supervisor?	**Is date/time conversion** necessary? NO
	X		Archiving bottles – if req., are they properly marked?	# of hours to AK Local Time: N/A
*	X		Are there any **problems**? PM Notified? Yes	**Thermometer ID:** 69 D
	X		Were samples preserved correctly and pH verified? MeOH EM	
	X		If this is for PWS, provide **PWSID.**	
	X		Will courier charges apply?	
			Method of payment?	
X			Data package required? (Level: (1) / 2 / 3 / 4)	
			Notes:	
	X		Is this a DoD project? (USACE, Navy, AFCEE)	

Cooler ID	Temp Blank	Cooler Temp
1	15.6 °C	6.1 °C
	°C	°C
	°C	°C
	°C	°C
	°C	°C

*Temperature readings include thermometer correction factors

Delivery method (circle all that apply): (Client)
Alert Courier / UPS / FedEx / USPS /
AA Goldstreak / NAC / ERA / PenAir / Carlile
Lynden / SGS / Other:

Airbill #

Additional Sample Remarks: *(√ if applicable)*

- Extra Sample Volume?
- Limited Sample Volume?
- X Field preserved for volatiles? MeOH
- Field-filtered for dissolved?
- Lab-filtered for dissolved?
- Ref Lab required?
- Foreign Soil?

This section must be filled out for DoD projects (USACE, Navy, AFCEE)

Yes	No	
		Is received temperature 4 ± 2°C?
		Exceptions: Samples/Analyses Affected:
		Rad Screen performed? Result:
		Was there an airbill? *(Note # above in the right hand column)*
		Was cooler sealed with custody seals?
		# / where:
		Were seal(s) intact upon arrival?
		Was there a COC with cooler?
		Was COC sealed in plastic bag & taped inside lid of cooler?
		Was the COC filled out properly?
		Did the COC indicate COE / AFCEE / Navy project?
		Did the COC and samples correspond?
		Were all sample packed to prevent breakage?
		Packing material:
		Were all samples unbroken and clearly labeled?
		Were all samples sealed in separate plastic bags?
		Were all VOCs free of headspace and/or MeOH preserved?
		Were correct container / sample sizes submitted?
		Is sample condition good?
		Was copy of CoC, SRF, and custody seals given to PM to fax?

This section must be filled if problems are found.

Yes No — Was client notified of problems?

Individual contacted:
Via: Phone / Fax / Email *(circle one)*
Date/Time:
Reason for contact:

Change Order Required?
SGS Contact:

Notes: * Temp Blnk was 15.6

Completed by (sign): _____ **(print):** Dave Meyer

Login proof (check one): waived ____ required X performed by: _____

SGS

SAMPLE RECEIPT FORM (page 2)

SGS WO#: 1063868

#	Container ID	Matrix	Test	QC	TB	Container Volume: 1 L	500 mL	250 mL	125 mL	60 mL	40 mL	8oz (250 mL)	4oz (125 mL)	Other	Container Type: AG	CG	HDPE	Nalgene	Cubie	Coli	Septa	Other	Preservative: None	HCl	HNO_3	H_2SO_4	MeOH	$Na_2S_2O_3$	NaOH	Other
1,2	A	Z	AK101										2		X						X						X			
	B	Z	DRO/RRO									2			X						X		X							
			8270																											
			8082																											
3	A	Z	AK101		X								1		X						X						X			

Bottle Totals								2	3		

Completed by: _____ Date: 7/13/06